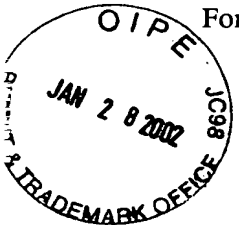


#4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)
)
Petter KARLSSON et al.) Group Art Unit: 3724
)
Application No.: 09/986,544) Examiner: Unassigned
)
Filed: November 9, 2001)
)
For: ARRANGEMENT FOR CUTTING AN)
OPTICAL FIBRE)



CLAIM FOR CONVENTION PRIORITY

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

The benefit of the filing date of the following prior foreign application in the following foreign country is hereby requested, and the right of priority provided in 35 U.S.C. § 119 is hereby claimed:

Swedish Patent Application No. 0004116-0

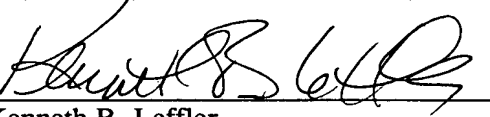
Filed: November 10, 2000

In support of this claim, enclosed is a certified copy of said prior foreign application. Said prior foreign application was referred to in the oath or declaration. Acknowledgment of receipt of the certified copy is requested.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

Date: January 28, 2002

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PRV

PATENT- OCH REGISTRERINGSVERKET
Patentavdelningen

Intyg Certificate



Härmed intygas att bifogade kopior överensstämmer med de handlingar som ursprungligen ingivits till Patent- och registreringsverket i nedannämnda ansökan.

This is to certify that the annexed is a true copy of the documents as originally filed with the Patent- and Registration Office in connection with the following patent application.

(71) Sökande *Telefonaktiebolaget L M Ericsson, Stockholm SE*
Applicant (s)

(21) Patentansökningsnummer *0004116-0*
Patent application number

(86) Ingivningsdatum *2000-11-10*
Date of filing

Stockholm, 2001-10-08

För Patent- och registreringsverket
For the Patent- and Registration Office


Christina Vängborg

Avgift
Fee *170:-*

AN ARRANGEMENT FOR CUTTING AN OPTICAL FIBRE**TECHNICAL FIELD**

The invention relates generally to optical fibres and more specifically to an arrangement
5 for cutting such fibres.

BACKGROUND OF THE INVENTION

Today, optical fibres are cut by means of hand-operated fibre cutters. Such cutters
comprise a fixture for receiving a fibre as well as mechanical means for tensioning,
10 bending and nicking the fibre.

With such a hand-operated cutter, it is impossible for an operator to ensure successive
identical cuts. Also, it will be necessary to frequently readjust the cutter due to the rough
treatment of the cutter by the operator.

SUMMARY OF THE INVENTION

The object of the invention is to bring about an arrangement for automated cutting of
optical fibres to secure successive identical cuts.

20 This is attained by the arrangement according to the invention in that a motor is provided
to operate the cutter. The motor is controlled to start a cutting movement in response to a
start signal from a control unit. The start signal is generated when the fibre is located in
the cutter. A detector is connected to the control unit to detect snap off of the fibre and in
response hereto cause the control unit to generate a stop signal to stop the cutting
25 movement. The cutting movement is automatically stopped at a predetermined position if
no fibre snap off is detected.

By running the motor repeatedly at the same speed, the same cutting force will be applied
to successive fibres. Hereby, identical cuts will be secured.

BRIEF DESCRIPTION OF THE DRAWING

The invention will be described more in detail below with reference to the appended drawing on which Fig. 1 is a schematic block diagram of an embodiment of an arrangement according to the invention.

5

DESCRIPTION OF THE INVENTION

Fig. 1 is a schematic block diagram of an embodiment of an arrangement according to the invention for cutting an optical fibre 1.

10 The fibre 1 is received in a fibre cutter, e.g. a known hand-operated cutter. In a manner known per se, the cutter comprises a fixture 2 and a handle 3 pivoted to the fixture 2 for pressing the fibre 1 towards mechanical tensioning, bending and nicking means (not shown) in the fixture 2 in order to cut the fibre 1. The fibre 1 can be placed in the fixture 2 by means of e.g. a robot arm (not shown).

15

In accordance with the invention, the handle 3 of the cutter is operated by a motor and not by hand.

In the embodiment shown in Fig. 1, the handle 3 is operated by a shaft 4 of a linear motor 5 via a lever 6 that is pivoted around a spindle 7. The ends of the lever 6 are provided with rollers such that a roller 8 is in contact with the end of the shaft 4 of the linear motor 5, and a roller 9 is in contact with the top side of the handle 3 of the cutter.

20

Thus, when the linear motor 5 runs and the shaft 4 of the linear motor 5 rises, the handle 3 is pressed down towards the fibre 1 via the roller 10 and vice versa.

25

The operation of the linear motor 5 is controlled by an output signal from a control unit 10. The control unit 10 is adapted to initiate a cutting movement in response to a start signal S from an operator or a robot when the fibre 1 to be cut has been placed in the fixture 2.

30

A sensor 11 is provided to continuously sense the position of the shaft 4 of the linear motor 5. The sensor 11 is connected to the control unit 10 to transfer information about the position of the shaft 4 to the control unit 10.

- 5 To control the operation of the linear motor 5 and thereby indirectly the operation of the handle 3 in accordance with the invention, a detector 12 is provided to detect when the fibre 1 snaps off when cut. Preferably, the detector 12 is located on the fixture 2.

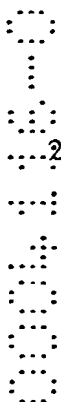
10 In a preferred embodiment, the detector 12 is an acoustic detector, e.g. a microphone that is adapted to detect a snap off sound when the fibre 1 snaps off.

The detector 12 can comprise an amplifier and a band-pass filter (not shown) and is adapted to generate an output signal only upon a snap off sound relating to the snap off of the fibre 1.

15

The detector 12 is connected to the control unit 10 that in response to the output signal of the detector 12 is adapted to immediately stop the linear motor 5 to stop the cutting movement of the handle 3.

- 20 If no snap off sound is detected by the detector 12 in connection with a cutting movement, the sensor 11 on the motor 5 is adapted to generate an output signal to the control unit 10 at a predetermined position of the shaft 4. In response to this output signal, the control unit 10 is adapted to immediately stop the motor 5.

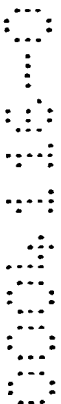


25 As should be apparent from the above, successive identical cuts can be made with the arrangement according to the invention.

CLAIMS

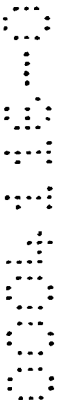
1. An arrangement for cutting an optical fibre (1), comprising a fibre cutter (2, 3),
characterized in that a motor (5) is provided to operate the fibre cutter (2, 3), the motor
5 being controlled by a control unit (10) to start a cutting movement in response to a start
signal to be generated when the fibre (1) is located in the fibre cutter (2, 3), and that a
detector (12) connected to the control unit (10) is adapted to detect snap off of the fibre
(1) and in response hereto cause the control unit (10) to generate a stop signal to stop the
cutting movement, the cutting movement being automatically stopped at a predetermined
10 position of the fibre cutter (2, 3) if no fibre snap off is detected.
2. The arrangement according to claim 1, **characterized in** that the motor (5) is a linear
motor.
- 15 3. The arrangement according to claim 1 or 2, **characterized in** that the detector (12) is
an acoustic detector adapted to detect a snap sound when the fibre (1) snaps off.
4. The arrangement according to claim 3, **characterized in** that the detector (12) is a
microphone.

20



ABSTRACT

An arrangement for cutting an optical fibre (1) comprises a fibre cutter (2, 3) for cutting the fibre. A motor (5) is provided to operate the cutter (2, 3). To start a cutting movement, the motor (5) is controlled by a control unit (10) in response to a start signal. The start signal is generated when the fibre (1) is located in the cutter (2, 3). A detector (12) is connected to the control unit to detect when the fibre (1) snaps off and in response hereto cause the control unit (10) to generate a stop signal to stop the cutting movement. If no fibre snap off is detected, the cutting movement is automatically stopped at a predetermined position of the cutter (2, 3).



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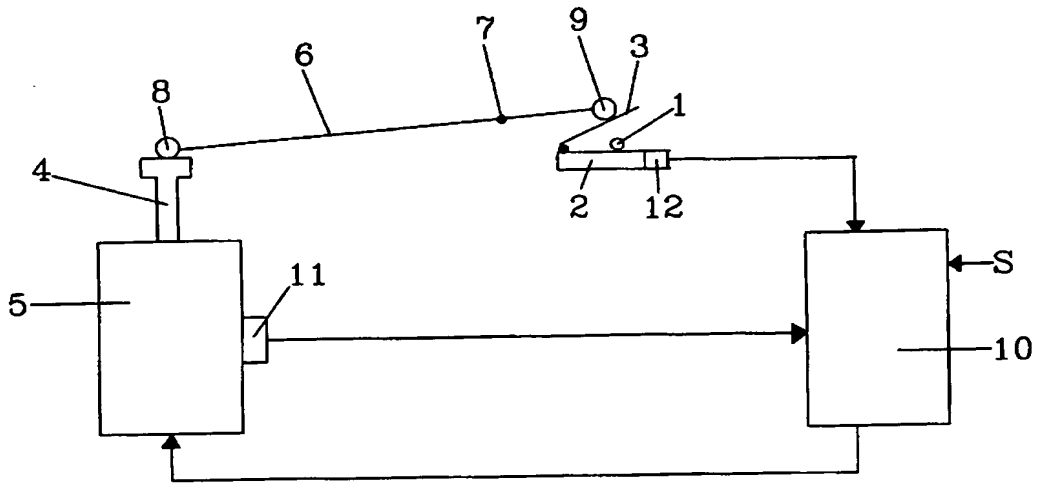


Fig. 1